AMENDMENTS TO THE CLAIMS

1-18. (canceled)

19. (new) A transgenic cell comprising a polynucleotide molecule which hybridizes under stringent hybridization conditions with a nucleic acid molecule comprising a nucleotide sequence as represented in Figures 5a, 5b, 6a, 6c, 7a, 8a, 8b, 9a, 10a, 11a, 11b, or 11d, wherein said polynucleotide molecule encodes a polypeptide which has desaturase activity.

20 (new) The transgenic cell according to Claim 19, wherein the cell comprises an expression vector which comprises the polynucleotide molecule and an expression regulatory element operably linked thereto.

21. (new) The transgenic cell according to Claim 20, wherein the expression regulatory element is a promoter.

22. (new) The cell according to Claim 19, wherein the polynucleotide molecule comprises the nucleic acid sequence as represented in Figures 5a, 5b, 6a, 6c 7a, 8a, 8b, 9a, 10a, 11a, 11b, or 11d.

23. (new) The cell according to any of Claim 19, wherein the cell over-expresses the polypeptide which has desaturase activity.

24. (new) The cell according to Claim 19, wherein the nucleotide sequence is as represented by Figure 10a, and wherein said polypeptide has Δ11-desaturase activity.

25. (new) The cell according to Claim 19, wherein the nucleotide sequence is as represented by Figure 8a, and wherein the polypeptide has Δ6-desaturase activity.

26. (new) The cell according to Claim 19, wherein the transgenic cell is a eukaryotic cell.

27. (new) The cell according to Claim 26, wherein the cell is a plant cell.

28. (new) A plant comprising a cell according to Claim 27.

29. (new) The plant according to Claim 28, wherein the plant is an oil seed plant.

30. (new) A seed comprising a cell according to Claim 27.

31. (new) The seed according to Claim 30, wherein the seed is an oil plant seed.

32. (new) The cell according to Claim 19, wherein the cell is a prokaryotic cell.

33. (new) A reaction vessel comprising

at least one polypeptide encoded by a polynucleotide molecule which hybridizes under stringent hybridization conditions with a nucleic acid molecule comprising a nucleotide sequence as represented in Figures 5a, 5b, 6a, 6c, 7a, 8a, 8b, 9a, 10a, 11a, 11b, or 11d, wherein said polynucleotide molecule encodes a polypeptide which has desaturase activity,

at least one fatty acid substrate, and

suitable co-factors,

wherein said vessel is adapted for desaturation of the at least one fatty acid substrate.

34. (new) The vessel according to Claim 33 wherein the vessel comprises a transgenic cell comprising an expression vector which comprises the polynucleotide molecule.

35. (new) The vessel according to Claim 34, wherein the cell is a yeast cell.

36. (new) The vessel according to Claim 34, wherein the cell is a prokaryotic cell.

37. (new) A method to desaturate a fatty acid substrate comprising the steps of:

i) providing a reaction vessel according to Claim 33; and

ii) culturing the cell contained in the reaction vessel under conditions which allow desaturation of at least one fatty acid substrate.

38. (new) A transgenic cell according to claim 19, wherein the transgenic cell comprises a polynucleotide molecule which encodes a polypeptide molecule comprising an amino acid sequence as represented in Figures 1c, 5c, 6b, 6d, 7b, 8c, 9b, 11c or 11e.

39. (new) A transgenic cell comprising a polynucleotide molecule which encodes a polypeptide molecule, wherein the polypeptide molecule comprises an amino acid sequence having at least 95% sequence identity to an amino acid sequence shown in Figure 1c, and wherein the polypeptide has desaturase activity.

40. (new) The transgenic cell according to Claim 39, wherein the polypeptide molecule comprises an amino acid sequence having at least 99% sequence identity to an amino acid sequence shown in Figure 1c.

41. (new) The transgenic cell according to Claim 40, wherein the polypeptide molecule comprises an amino acid sequence shown in Figure 1c.